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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,809	12/12/2003	Karlheinz Bing	BING ET AL.-6	2779

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EXAMINER

AFZALI, SARANG

ART UNIT	PAPER NUMBER
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3726

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/734,809

Applicant(s)

BING ET AL.

Examiner

Sarang Afzali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE filed on 1/17/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/17/2007 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 3, & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over (WO 02/06658) and/or in alternative in view of Campbell (US 2,987,810) and Ricaud et al. (U.S. 6,705,915).

As applied to claims 1, 2, & 6, WO 02/06658 discloses a method for the production of a forged piston for an internal combustion engine, the piston having a combustion depression provided on the piston head, comprising the steps of: forming a piston blank (10, Fig. 2) from a first cylindrical part (14, Fig. 3) having at least one flat

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face made of oxidation-resistant steel stainless steel) and a second cylindrical part (16, Fig. 3) having at least one flat face made of hot-forgeable steel (steel SE 4140), with the same diameters, said step of forming comprising: bringing together the parts at their faces and aligning them with respect to their diameters; fixing the two parts (12, Fig. 3); forging the parts to form combustion depression in oxidation-resistance steel, and finishing the piston blank via machining to produce a piston ready for installation the internal combustion engine (Fig. 2).

WO 02/06658 teaches the invention cited including that the parts may be fixed in any suitable way. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have fixed the parts in WO 02/06658 using a spot welding obtained through electron beam welding (including at least three weld points), in order to achieve the benefits of using such known and widely used welding technique.

In alternative, if the Applicant does not agree that WO 02/06658 teaches the "at least three weld points", Campbell teaches a method of connecting two metal pieces wherein two weldable sheets of metal are superimposed and secured to each other by spot welding (to provide non-continuous weld with desired number of weld points) prior to being forge welded at the contact surfaces (col. 2, lines 43-47). Furthermore, Ricaud et al. teach an assembling method wherein two cylindrical parts (cup 13 and skirt 2, Figs. 2A-C) are welded (weld beads 23) at three weld points (19) on the circumference by an angle 120 degrees apart from each other (col. 3, lines 29-32) to ensure a good mechanical retention of the cup in the skirt (col. 3, lines 18-19).

It would have been obvious to one of ordinary skill in the art at the time of invention to have provided WO 02/06658 with spot welding as taught by Campbell in order to provide a suitable joint of the parts prior to being connected at the contact surfaces by a forging step and further have provided WO 02/06658 with a suitable number of weld points and weld technique as taught by Ricaud et al. to provide an effective and a good mechanical retention of the cup and skirt (col. 3, lines 31-32).

As applied to claim 3, Ricaud et al. teach that the step of fixing (welding of two parts together) require no preheating of the parts.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/06658 in view of Campbell and Ricaud et al. as applied to claim 1 above, and further in view of Rudd (U.S. 3,872,275).

As applied to claims 4 & 5, WO 02/06658/Campbell/Ricaud et al. teach the claimed invention including the fixing of first and second parts to each other. However, WO 02/06658/Campbell/Ricaud et al. do not explicitly teach the step wherein immediately after fixing (welding) of parts together, the parts are inductively heated and that the heating process takes place at a temperature of 1100°C to 1300°C.

Rudd teaches a method of forge welding two dissimilar metal parts in a heated state wherein the heating takes place inductively by suitably configuring the induction coil and adjusting its position with respect to the desired forge weld line and by properly controlling the heating time to provide a continuous forge weld between the two metal parts without undesirable heating (col. 2, lines 19-26) and further teaches that heating

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process takes place at a temperature of at least 2000°F (equivalent to 1093°C) to forge weld the surfaces of the materials welded to each other (col. 2, lines 45-54). It would have been obvious to one of ordinary skill in the art at the time of invention to have provided WO 02/06658/Campbell/Ricaud et al. with induction heating step as taught by Rudd to obtain an effective rapid continuous forge weld seam and without causing undesirable heating hence preventing damage or harmful distortion of portions of the parts outside of the forge weld area (col. 2, lines 22-26).

Response to Arguments

5. Applicant's arguments filed 01/17/2007 have been fully considered but they are not persuasive.

6. Applicant's arguments, see "Remarks", page 1, paragraphs (2 & 3), with respect to the objection to claims 1-6 and the rejection of claims 1-6 under 35 USC 112 2nd paragraph, have been fully considered and are persuasive. The objection to claims 1-6 for informalities and the rejection of claims 1-6 under 35 USC 112 2nd paragraph have been withdrawn.

7. Under "Remarks", page 2, with respect to WO 02/06658 and Campbell and Rudd references, Applicant argues that "WO 02/06658 discloses a process of making a piston head by hot forging two parts previously welded together. In spite of the statement that the two part may be fixed together in any suitable way (page 2, third paragraph, line 2), it suggests to weld the parts together only over the entire surface of their connecting faces, for example by flash butt welding, diffusion bonding or friction welding" and

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further argues that "Campbell does not (t)each a process by which a piston is formed via the claimed welding process in combination with forging of the piston to achieve a finished piston" and that "Rudd discloses a process of forge welding under pressure which is completely different of the fixation of two parts by three or more weld points without application of pressure."

The Examiner respectfully disagrees with the above assertions and once again reiterates that WO 02/06658 reference is used to teach that piston heads are made from two-parts and hot forged together and Campbell reference is used to teach that two metal pieces are joined by spot welding (non-continuous weld/desired number of weld points) prior to being forge welded at the contact surfaces and Ricaud et al. is used to teach that two cylindrical parts are welded at three weld points on the circumference and Rudd is used to teach the induction heating step and the temperature range.

Note that WO 02/06658 teaches the two parts are fixed together in any suitable way (which Examiner construes as spot weld at at least three weld points at the circumference) regardless of subsequently being welded at the entire contact surfaces.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarang Afzali whose telephone number is 571-272-8412. The examiner can normally be reached on 7:00-3:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S.A.

SA
3/12/2007



DAVID P. BRYANT
SUPERVISORY PATENT EXAMINER

3/12/07